

Remarks:

Reconsideration of the application is requested.

Claims 1-5 and 11-24 remain in the application. Claims 1 and 3 have been amended. Claims 11, 12, and 18 have been withdrawn from consideration.

In item 2 on page 2 of the above-identified Office action, the Examiner maintained the restriction requirement. Applicants believe that the Examiner is mistaken in maintaining the election of species requirement. However, since the independent claims are generic to both species and in order to expedite prosecution, Applicants do not traverse the Examiner's maintenance of the election of species requirement.

In item 4 on page 3 of the Office action, claims 1-5, 13-17, and 19-24 have been rejected as being indefinite under 35 U.S.C. § 112, second paragraph.

More specifically, the Examiner has stated that the words "comparatively" and "good" are unclear or relative. The words "comparatively" and "good" have been deleted from claims 1 and 3. The Examiner also stated that "there is a lack of antecedent basis for 'the printing circuit board'". The last paragraph of claims 1 and 3 recites " ... mechanical decoupling

from a printed circuit board upon the semiconductor component being soldered onto *the* printed circuit board." (emphasis added). Hence, it is believed that there is proper antecedent basis for "the printing circuit board" in claims 1 and 3.

It is accordingly believed that the claims meet the requirements of 35 U.S.C. § 112, second paragraph. Should the Examiner find any further objectionable items, Counsel would appreciate a telephone call during which the matter may be resolved. The above-noted changes to the claims are provided solely for the purpose of satisfying formal requirements or are made solely for cosmetic reasons to clarify the claims. The changes are neither provided for overcoming the prior art nor do they narrow the scope of the claims for any reason related to the statutory requirements for a patent.

In item 6 on page 4 of the Office action, claims 1-5, 13-17, and 19-24 have been rejected as being obvious over *Akagawa et al.* (EP 0 734 059) in view of *Farnworth et al.* (US 6,639,600) and *IBM Technical Bulletin*, "Solder Plated Resin Ball", Vol. 38, pages 463-464 (May 1995), under 35 U.S.C. § 103.

The Examiner stated on page 3 of the Office action that it is unclear how the limitations recited in the last paragraph of claims 1 and 3 limit the claims. It is therefore believed that the Examiner did not give the limitations recited in the

last paragraph of claims 1 and 3 any patentable weight. Consequently, claims 1 and 3 have been amended in an effort to even more clearly define the relationships of the recited features and method steps. It is believed that the limitations in the last paragraph of claims 1 and 3 should be and must be given patentable weight.

The inventive concept of the invention of the instant application is to use a combination of conductive material and small balls in order to achieve a desired mechanical decoupling of a semiconductor component from a printed circuit board when the semiconductor component is soldered onto the printed circuit board. None of references, whether taken alone or in any combination, suggest using a combination of conductive material and small balls in order to achieve a desired mechanical decoupling from a printed circuit board when a semiconductor component is soldered onto the printed circuit board. Therefore, the invention as recited in claims 1 and 3 of the instant application is believed not to be obvious over the applied references.

It is accordingly believed to be clear that Akagawa et al. in view of Farnworth et al. and IBM Technical Bulletin "Solder Plated Resin Ball" do not suggest the features of claims 1 and 3. Claims 1 and 3 are, therefore, believed to be patentable over the art and since claims 2, 4-5, and 11-24 are ultimately

dependent on either claim 1 or claim 3, they are believed to be patentable as well.

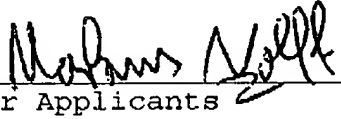
In view of the foregoing, reconsideration and allowance of claims 1-5 and 11-24 are solicited.

In the event the Examiner should still find any of the claims to be unpatentable, the Examiner is respectfully requested to telephone counsel so that, if possible, patentable language can be worked out. In the alternative, the entry of the amendment is requested as it is believed to place the application in better condition for appeal, without requiring extension of the field of search.

Petition for extension is herewith made. The extension fee for response within a period of one month pursuant to Section 1.136(a) in the amount of \$ 110.00 in accordance with Section 1.17 is enclosed herewith.

Please charge any other fees which might be due with respect to Sections 1.16 and 1.17 to the Deposit Account of Lerner and Greenberg, P.A., No. 12-1099.

Respectfully submitted,



MARKUS NOLFF
REG. NO. 37,006

For Applicants

MN:cgm

January 13, 2003

Lerner and Greenberg, P.A.
Post Office Box 2480
Hollywood, FL 33022-2480
Tel: (954) 925-1100
Fax: (954) 925-1101

Applic. No. : 09/761,594

Version with markings to show changes made:

Claim 1 (thrice amended). A semiconductor device in chip format, comprising:

a chip;

electrical connection pads disposed on said chip;

at least one first insulating layer disposed on said chip such that said electrical connection pads are free of said first insulating layer on at least one surface;

interconnects running on said first insulating layer and in each case lead from said electrical connection pads to base regions;

a second insulating layer disposed on said interconnects and on said first insulating layer, said second insulating layer having a thickness, said second insulating layer having openings formed therein leading to said base regions;

a conductive material with an elasticity, introduced into each of said openings;

small balls disposed on said conductive material in a region of a free end of each of said openings, said small balls

having an elasticity and being metallic at least on an outside; and

said thickness of said second insulating layer, said elasticity of said conductive material, and said elasticity of said small balls resulting in a desired [comparatively good] mechanical decoupling from a printed circuit board upon the semiconductor component being soldered onto the printed circuit board.

Claim 3 (thrice amended). A method for producing semiconductor devices in a chip format, which comprises:

providing chips;

placing electrical connection pads on the chips;

applying at least one first insulating layer to at least one surface of the chips such that the electrical connection pads are left at least partially uncovered by the first insulating layer;

producing interconnects on the at least one first insulating layer, the interconnects leading to base regions of external connection elements;

applying a second insulating layer on the interconnects and on the at least one first insulating layer, the second insulating layer having a thickness;

forming openings in the second insulating layer above the base regions and leading to the base regions;

introducing a conductive material with an elasticity into the openings;

placing small balls onto the conductive material in a region of a free end of each of the openings, said small balls having an elasticity and being metallic at least on an outside; and

selecting the thickness of said second insulating layer, the elasticity of the conductive material, and the elasticity of the small balls [resulting in] to obtain a desired [comparatively good] mechanical decoupling from a printed circuit board upon the semiconductor component being soldered onto the printed circuit board.